

The synthesis of ...

S/079/62/032/008/005/006
D204/D307

4 hours at 0°C (to avoid polymerization) and subsequently over 3 hours at room temperature. The resulting gel was dissolved in water (100 ml), washed with a little benzene, treated with 10 ml of concentrated NaHCO_3 and washed again with benzene. NaHCO_3 (9 g) was then added and the mixture was heated on a steam bath until the final product distilled off. It was then separated from the distillate with ether, washed with 2 % HCl and then with water. After removing the ether A was sublimed at 95 - 100°C/0.01 mm Hg, to form pale yellow crystals of m.p. 110.5°C. The yield was 2.5 g (15.9 %). A was remarkably resistant to polymerization and aerial oxidation, but was easily hydrogenated in alcoholic solution, over Adams' Pt, to form a new compound which was identical with 2-methyl-6-ethylindoline (B). The latter was separately synthesized by refluxing 2-methyl-5-ethylpyridine and bromoacetone, in benzene, for 3 hours. The resulting quaternary salt was converted to B by a procedure analogous to that for A. There is 1 figure.

ASSOCIATION: Kiyevskiy politekhnicheskii institut (Kiyev Polytechnical Institute)

Card 2/3

BILAY, V.Y.; MIKHAYLOVNINA, A.A.; STEPANOV, F.N.

Active principle of Dendrochium toxicum. Dokl.AN SSSR 144
no.1:105-107 My '62. (MIRA 15:5)

1. Institut mikrobiologii AN USSR i Institut organicheskoy
khimii AN USSR. Predstavleno akademikom M.M.Shemyakinym.
(Dendrochium) (Toxins and antitoxins)

S/079/63/033/001/007/023
D204/D307

AUTHORS: Veretenova, T. N. and Stepanov, F. N.

TITLE: Synthesis of the vinyl esters of terephthalic acid

PERIODICAL: Zhurnal obshchey khimii, v. 33, no. 1, 1963, 91-94

TEXT: Esters $\text{H}_2\text{C}=\text{CH}\text{OOC}-\text{C}_6\text{H}_4-\text{COOR}$ (where $\text{R}=\text{CH}=\text{CH}_2-$, CH_3- , C_2H_5- , $n-\text{C}_4\text{H}_9-$, $\beta\text{-ClC}_2\text{H}_4-$, $n-\text{C}_8\text{H}_{17}$, and C_6H_5) were obtained by treating a suspension of mercury-bis-acetaldehyde in dichloroethane/anh.pyridine (mixture A) with a solution of $\text{ClOC}-\text{C}_6\text{H}_4-\text{COOR}$ in dichloroethane (dropwise), stirring for one hour, filtering, washing the filtrate with water, 1% HCl , aq. NaHCO_3 and water, and drying over CaCl_2 . The solutions were then freed from dichloroethane by evaporation and were distilled under vacuum. 49 - 63% yields were achieved. The divinyl ester was prepared by treating A with $\text{ClOC}-\text{C}_6\text{H}_4-\text{COCl}$. The esters polymerized in the presence of benzoyl
Card 1/2

Synthesis of the vinyl ...

S/079/63/033/001/007/023
D204/D307

peroxide or diazoaminobenzene, without a solvent, to give transparent polymers ranging from the hard polymethylvinyl terephthalate to rubbery polyoctylvinyl terephthalate. The divinyl ester gave rise to a 3-dimensional polymer insoluble in organic solvents. There are 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut i Kiyevskiy politekhnicheskiy institut (All-Union Scientific Research Motion Picture Institute and Kiev Polytechnic Institute)

SUBMITTED: January 2, 1962

Card 2/2

STEPANOV, F.N.; BAKLAN, V.F.

Interaction between bromadamantanes and metals. Zhur.ob.khim. 34 no.2:
579-584 F '64. (MIRA 17:3)

1. Kiyevskiy politekhnicheskoy institut i Institut organicheskoy khimii
AN UkrSSR.

STEFANOV, F.N.; MYRSINA, R.A.

Synthesis of d, l-piperitone. Zhur. ob. khim. 34 no.9:3092-3096
S '64. (MIRA 17:11)

1. Institut organicheskoy khimii AN UkrSSR.

STEPANOV, F. N.

The properties of Monel Metal Containing Additions of Beryllium, Silicon, and Cobalt. I. J. Berkoskiy and F. N. Stepanov (Metallurg (Metallurgist), 1939, (2), 86-91).--(In Russian) Alloys based on Monel metal with an addition of 1% beryllium have a tensile strength of 160-170 kg./mm.² and elongations of 5-10% after suitable heat-treatment. An addition of silicon to the Monel metal with 1% beryllium further improves the mechanical properties. Cobalt is not a useful addition to this alloy.-- N. A.

AS & SLA METALLURGICAL LITERATURE CLASSIFICATION

STEPANOV, F.N.

M

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***Alloys for Electrodes of Thermoelements and Compensation Leads.** I. Ya. Berkovsky and F. N. Stepanov (*Tekhn. Ind.*, 1940, 11, (6), 13-17; (7), 14-18; *Chem. Zentr.*, 1941, 112, (I), 1845; *C. Aba.*, 1943, 37, 2322). - [In Russian.] The thermoelectric powers and their isotherms were determined for alloys of the systems copper-nickel, nickel-chromium, nickel-aluminium, nickel-manganese, and nickel-silicon. The effect of various admixtures on these properties was studied. The suitability of various alloys for the production of compensation wires and the relation between the mechanical, electrical, and physical properties of such alloys and their composition were also investigated. Fusion, casting, and rolling, and subsequent machining and working of these alloys are discussed.

ASB 51A METALLURGICAL LITERATURE CLASSIFICATION

STEpanov, EN																																																																													
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<p>Alloy for thermocouples. F. N. Stepanov. U.S.S.R. 64,451, April 30, 1945. Thermocouples made from an alloy of Cu 15.20, Mn 1.3, Al 1.3, Si up to 2%, and the rest Ni require no temp. corrections for the free ends. U.S.S.R. 64,452, April 30, 1945, specifies an alloy of Cr 5.5-11.5, Fe 6.0-8.0%, and the rest Ni. U.S.S.R. 64,453, April 30, 1945, specifies an alloy of Fe 1.0-12.0, Mn 0.5-1.0%, and the rest Ni. U.S.S.R. 64,454, April 30, 1945, specifies an alloy of Cu 15.0-17.0, Mn 0.5-1.0, Al 0.1-2.0%, and the rest Ni. M. Hosh</p>																																																																													
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																																													
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КУПЕРШТИНСКИЙ, И.Б.; СТЕПАНОВ, Е.Н.

Increasing the strength and machinability of cast magnets.
Приборостроение no.6:19-21 Je '57. (MLRA 10:7)
(Magnets)

SOV/180-59-3-20/43

AUTHOR: Stepanov, F.N. (Moscow)

TITLE: The Requirements of the Aviation Industry
with Regard to Permanent Magnets

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk,
Metallurgiya i toplivo, 1959, Nr 3, pp 117-119 (USSR)

ABSTRACT: The aviation industry makes a number of special requirements on magnets. In order to investigate the production and application of permanent magnets it is necessary to set up a Scientific Research Institute for magnetically hard, or perhaps simply magnetic, materials with experimental and production facilities; there is also need of a number of production centres for the manufacture of cast, metallo-ceramic and powder magnets and magnetic systems. Outstanding problems include the following. It is necessary to improve the methods of manufacture and the actual manufacture of metallo-ceramic magnets and sintered powder magnets. Production methods of producing cast magnets with orientated crystals are required. Cast magnets made to standard GOST 4402-48 are of satisfactory magnetic properties but they are not strong enough. There is a need for systematic study of the composition of iron-nickel-

Card 1/2

SOV/180-59-3-20/43

The Requirements of the Aviation Industry
with Regard to Permanent Magnets

aluminium alloys of high strength and good machinability. Technical data is required on the design of stable magnetic systems with permanent magnets of high coercivity alloys. It is necessary to develop high coercivity magnets and magnetic systems that are stable in operating conditions at temperatures ranging from - 200 to + 350°C. The existing standard GOST 4402-48 is obsolete and new standards are required for powder and oxide magnets. Accurate methods of casting magnets are required. Magnets are required that are resistant to corrosive atmospheres within the temperature range of - 200 to + 350°C. Improvements are required in magnetic alloys for aviation gyromotors. Good magnetic materials of lower specific gravity are required. High coercivity alloys are not always stable enough for use in instruments and work on this subject is required. Standard methods of inspecting the magnetic properties of magnets in industry are not available and should be developed. It is also necessary to develop and manufacture special equipment for production testing of magnets at both the manufacturers and the Users' works.

Card 2/2

STEPANOV, F.N.; YURCHENKO, A.G.

Condensation of azulenes with carboxylic acid anhydrides.
Zhur. ob. khim. 34 no. 3:901-907 Mr '64. (MIRA 17:6)

1. Kiyevskiy politekhnicheskii institut.

STEPANOV, F.M.; TURCHINOVICH, G. YU.

Synthesis of copolymers of substituted indolizines with
styrene. Ukr. knim. zhur. 30 no.7:738-742 '64

(MIRA 18:1)

1. Lvivskiy politekhnicheskij institut.

STEPANOV, F.N.; BAKLAN, V.F.; ISAYEV, S.D.

Adamantane and its derivatives. Part 2: Synthesis of trisubstituted derivatives of adamantane. Zhur.org.khim. 1 no.2:280-283 F '65.
(MIRA 18:4)

1. Kiyevskiy politekhnicheskoy institut i Institut organicheskoy khimii AN UkrSSR.

STEFANOV, S.M.; VEREDNKOVA, L.S.

Diyl esters of terephthalic acid. Part 2. Zhur. org. khim.
no.8:1396-1399 Ag '65. (MIRA 18:11)

L. Shostkinskiy filial Nauchno-issledovatel'skogo kinofotoinstituta
(NIKFI).

AUTHOR: Stepanov, F. P.

SOV/126-6-3-14/32

TITLE: Some Data on the Influence of Work Hardening of Hardened Steel on its Reversible Temper Brittleness. (Nekotoryye dannyye o vliyanií naklepa struktur zakalki na obratnuyu otpusknuyu khrupkost' stali)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 3, pp 435-436 (USSR)

ABSTRACT: The influence is studied of the development of reversible temper brittleness in hardened low alloy engineering steel resulting from tensile plastic deformation in the cold state; the test procedure and some of the results are described. The composition of the material was as follows: 0.10% C, 0.98% Mn, 0.96% Si, 0.021% S, 0.025% P, 0.36% Cr, 1.10% Ni, 0.40% Cu. Data on the influence of tensile deformation after hardening on the impact strength and on the type of fracture for various conditions of cooling after tempering are entered in Table 2. These show that the investigated steel has a tendency to develop temper brittleness since the impact strength was lower for all the test temperatures in the case of slow cooling after tempering at 570 to 530°C as compared to quenching in water,

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SOV/126-6-3-14/32

Some Data on the Influence of Work Hardening of Hardened Steel
on its Reversible Temper Brittleness

which was particularly pronounced when the test temperature was lowered to -60°C . The plastic deformation of the metal in the cold state after hardening results in a reduction of the temperature of transition to the brittle state and eliminates the crystalline fracture, which is a characteristic feature of brittle fracture. Thus, it was established that plastic deformation of 1.5% produced by tension in the cold state of the hardened steel leads to an increase in the impact strength and a weakening of the tendency to temper brittleness; an increase of the cold plastic deformation to 4% eliminates entirely the tendency to temper brittleness for test temperatures down to -60°C . In both cases the threshold temperature of the brittleness is reduced. On the basis of the conception that the temper brittleness is linked with separation along the boundaries of the initial grains of brittle phases, it can be assumed that plastic deformation of the hardened structure leads to a change in the kinetics and the character of separating out of these phases. Furthermore, the obtained data indicate the possible role of processes

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SOV/126-6-3-14/32

Some Data on the Influence of Work Hardening of Hardened Steel
on its Reversible Temper Brittleness

associated with the presence of phase hardening along
the boundaries of the original grains; for verifying
these conceptions the author considers it advisable to
carry out experiments on a wider basis.
There are 3 tables, 1 figure and 9 references, all of
which are Soviet.

SUBMITTED: December 10, 1956

1. Steel--Hardening 2. Steel--Mechanical properties 3. Steel
--Deformation 4. Steel--Phase studies

Card 3/3

L 51301-65 EWT(m)/EWP(k)/EWP(z)/EWA(c)/EWP(b)/T/EWA(d)/EWP(w)/EWP(t)
 ACCESSION NR: AP5016415 Pf-4/Pad IJP(c) UR/0133/64/000/010/0927/0930
 MJW/JD/EW
 AUTHOR: Fetisov, S. G. (Candidate of technical sciences); Prokhorov, A. V. (Engineer);
 Stepanov, F. P. (Engineer) 36
 TITLE: Steel MK-40 as a substitute for nickel steels MS-1 and SKhL-4 33
 SOURCE: Stal', no. 10, 1964, 927-930 8
 TOPIC TAGS: steel, nickel steel, ship component, metal property, alloy steel, sheet
 metal, metallurgic process/MK-40 steel, MS-1 steel, SKhL-4 steel
 Abstract: The non-nickel steel MK-40 with a yield point of not less than
 40 kg/mm² can be used entirely for welded hull shipbuilding sheet steel with
 thicknesses from 4 to 32 mm. According to its physical, mechanical and engineer-
 ing properties, as well as weldability, steel MK-40, 4-9 mm thick, in the hot-
 rolled condition and from 10 to 32 mm in the improved condition is not inferior
 to the analogous class (MS-1 and SKhL-4). 2

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ACCESSION NR: AP5016415

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brittle fracture; however, the presence in them of nickel (1.0-1.3 and 0.5-0.8%) substantially hinders their further application in this field. As a result of laboratory and industrial investigations completed on steel grade (manganese and silicon), which has been supplied for a long time by the

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ACCESSION NR: AP5016415

hardened condition; thermal hardening for sheets SKhL-4 and MS-1 is used beginning with a thickness of $d = 16$ mm):

	MK-40		
d , mm	4-8	9-15	16-32
σ_B , kg/mm ²	54-75	54-70	54-66

	SKhL-4		MS-4	
d , mm	4-5	6-8	9-15	16-32
σ_B , kg/mm ²	54-75	54-60	54-66	21-32

An industrial batch of steel MK-40 was prepared at the plant for constructing a lumber carrier (237 sheets, 16-32 mm thick, from the metal of 23 melts). The steel was smelted in basic open-hearth furnaces with a capacity of 70-130 tons by the scrap iron-ore process into molten pig iron; preliminary decarboxylation and alloying the metal with manganese was done in the furnace by adding the entire calculated quantity of silicon-manganese before tapping the melt. Final decarboxylation and alloying with silicon was done in the ladle with 75% ferro-silicate and aluminum (600-700 gram/ton). Additionally, ferrotitanium (based on 0.035-0.040% Ti without consideration of waste) was added to the ladle so.

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ACCESSION NR: AP5016415

The metal was bottom poured to produce sheet ingots weighing 2.55-8.0 tons.
The chemical composition of the metal of the entire melt was within grade limits.
The ingots were heated according to a regime established for

STEPANOV, G.; KOGAN, A.

Construction of major industrial chemical complexes in Barnaul.
Na stroi. Ros. 4 no.5:8-9 My '63. (MIRA 16:5)

1. Glavnyy inzh. Barnaul'skogo stroitel'nogo tresta gazovoy
promyshlennosti (for Stepanov). 2. Glavnyy tekhnolog Barnaul'skogo
stroitel'nogo tresta gazovoy promyshlennosti (for Kogan).
(Barnaul--Chemical plants--Design and construction)

STEPANOV, G.

Ivan Ivanovich Elkin; on his 60th birthday. Zhur. mikrobiol., epid.
i immun. 40 no.11:156-157 N '63. (MIRA 17:12)

STEPANOV, G.

Seminar for the intensification of production processes
and improvement of the quality of leather raw materials.
Mias. ind. SSSR 34 no.5:53 '63. (MIRA 16:11)

1. Tashkentskiy myasokombinat.

VORONKOV, G.A., inzhener; GRIBOVSKIY, P.O., inzhener; STAPANOV, G.A., kandidat
tekhnicheskikh nauk.

Modern methods of molding ceramic electrical insulation products from
non-plastic material. Vest.elektroprom. 18 no.6:16-19 Je '47. (MLRA 6:12)

1. GIEKI.

(Electric insulators and insulation)

STEPANOV, G.A.

KITAYGORODSKIY, I.I.; STEPANOV, G.A.

Ceramic bodies and products. Patent U.S.S.R. 78,331 , Dec.31, 1949.
(CA 47 no.19:10194 '53)

86

AUTHOR: Stepanov, G. A. Cand. Tech. Sci.

TITLE: Dielectric Losses in Potassium-Sodium
Borosilicate Glasses (Dielektricheskiye poteri
borosilikatnykh kaliy-natrovykh stekol)

PERIODICAL: Vestnik Electropromyshlennosti, 1957, No.2.
pp.57-62 (USSR).

ABSTRACT: The use of glass in electrical insulation is one
of the major objectives of the electrotechnical
industry during the current Five Year Plan.
This article deals with one side of the general
problem, the relationship between the dielectric
losses in and the composition of potassium-sodium
borosilicate glasses. This problem was studied by
Skanavi who found the minimum in the power factor

Card 1/5

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TITLE:

Dielectric Losses in Potassium-Sodium
Borosilicate Glasses (Dielektricheskiye poteri
borosilikatnykh kaliy-natrovykh stekol)

curve corresponding to a certain ratio of sodium to potassium which was ascribed to a "neutralization effect". Similar behaviour of other properties of these glasses have also been observed by others. Skanavi ascribed these phenomena to structural features and the dielectric losses to structural losses. However, the explanation was only qualitative, mainly because the structure of glass is not yet well understood.

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TITLE: Dielectric Losses in Potassium-Sodium
Borosilicate Glasses (Dielektricheskiye poteri
borosilikatnykh kaliy-natrovykh stekol)

Meanwhile the concept of glass as a combination of ions or ionic groupings is gaining ground. In silicate glasses the numerically preponderant ion is that of oxygen. It is, therefore, natural to suppose that in glass oxygen is responsible for most of the structural-geometric ion groupings. On the other hand only a few chemical elements can participate with oxygen in the structure of stable glasses and then only under certain conditions. In industrial glasses the main glass forming oxides are SiO_2 , B_2O_3 , PbO and some others. The structure of glasses containing different kinds of ions is then considered. Diagrams are drawn for the ionic

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TITLE:

Dielectric Losses in Potassium-Sodium
Borosilicate Glasses (Dielektricheskiye poteri
borosilikatnykh kaliy-natrovykh stekol)

excitation of the atoms of Si, B, Na, and K.
The theory of the ionic structure of glasses is
discussed. The relation between dielectric losses
and structural characteristics are given in a
graph. The compositions of several glasses are
tabulated together with dielectric losses and calcu-
lations of the structural characteristics, giving
the following for the various structural groups:
the concentration of groups in the glass, the
number of covalent linkages in the groups,

Card 4/5

86

TITLE: the total number of linkages, and the relative weakening of the linkages.

The text contains 6 diagrams and 5 tables; there are 6 references of which 5 are Slavic.

ASSOCIATION: Munstry of Electrotechnical Industry - МЭИ
(Munisterstvo elektrotekhnicheskoy promyshlennosty)

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card/5/5

8(2)

SOV/119-59-10-9/19

AUTHOR: Stepanov, G. A., Engineer

TITLE: ~~Manufacturing Plants~~
The Safety Problem of High Voltage Testing Apparatus in
Instrument Manufacturing Plants

PERIODICAL: Priborostroyeniye, 1959, Nr 10, pp 18 - 19 (USSR)

ABSTRACT: The "Pravila tekhnicheskoy ekspluatatsii i ustroystva elektrotekhnicheskikh ustanovok" (Rules for the operation and installation of electrotechnical apparatus) valid at present, do not contain a section concerning high voltage testing apparatus. For the purpose of clarifying the working conditions of this apparatus, the author carried out investigations in various factories. After working out a general systematization on some dozen devices, the author proposes the diagram for such devices shown in figure 1, which complies with GOST requirements and safety rules. A total view of this apparatus is shown in figure 2. Its doors are fitted with guard switches and the main switch is operated by push-button. Two indicator lights show the working conditions of the installation. In the upper part there is the test chamber with an earthed metal plate for the test object. The input voltage

Card 1/2

1. Safety Problem of High Voltage Testing Apparatus in SOV/119-59-10-9/19
Instrument Manufacturing Plants

is 220 or 380 v. The author worked out a project for safety rules and working instructions of such devices, and these rules are handed out to every worker in factories where the diagram proposed by the author is used. There are 2 figures.

Card 2/2

MARKOVETS, M.P.; STEPANOV, G.A.

Critical stage of deformation of the KhN70VMIUT (EI765) alloy.
Metalloved. i term. obr. met. no.7:26-27 J1 '63. (MIRA 16:7)

1. Moskovskiy energeticheskiy institut.
(Nickel-chromium-tungsten alloys—Hardening)
(Deformations (Mechanics))

S/032/63/029/003/014/020
B101/B186

AUTHORS: Markovets, M. P., and Stepanov, G. A.

TITLE: The problem of the influence of the dimensions of a specimen and of the cutting conditions on the long-life strength

PERIODICAL: Zavodskaya laboratoriya, v. 29, no. 3, 1963, 356-357

TEXT: The long-life strength of a Ξ W 765 (EI765) nickel-chromium alloy was investigated (0.11% C, 0.23% Si, 0.29% Mn, 0.005% S, 0.008% P, 14.6%Cr, 0.55% Fe, 1.22% Ti, 1.85% Al, 5.05% W, 4.17% Mo). Samples of 5 and 10 mm diameter were hardened in oil at 1150°C for 3 hrs and aged at 800°C for 20 hrs, whereupon the specimens showed the mechanical properties:
 $\sigma_B = 113 \text{ kg/mm}^2$, $\sigma_{0.2} = 73 \text{ kg/mm}^2$; $\delta_5 = 25\%$; $\psi = 26\%$; $a_n = 9.2 \text{ kgm/cm}^2$, Brinell hardness 285. The long-life strength was tested at 715°C, the maximum time being 4400 hrs. It was found that in the cutting process on a lathe the turning conditions, especially the feed rate S (mm per revolution), have an influence on the long-life strength:

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The problem of the influence ...

S/032/63/029/003/014/020
B101/B186

Diameter, mm	S, mm/rev	limit of long-life strength	
		$\sigma \cdot 10^4$, kg/mm ²	$\sigma \cdot 10^5$, kg/mm ²
5	0.2	18.0	13.0
5	0.6	22.0	15.5
10	0.2	22.0	15.5
10	0.6	22.0	15.5

From these data it follows that the cutting conditions exert less influence on the long-life strength of specimens with a diameter of 10 mm than on specimens with 5 mm diameter. There is 1 table.

ASSOCIATION: Moskovskiy energeticheskii institut (Moscow Power Engineering Institute)

Card 2/2

GARBER, Ye.D., kand.tekhn.nauk; STEPANOV, G.A., inzh.

Investigating the automatic control system of a marine boiler
plant by means of an electronic model of the boiler. Sudostroenie
29 no.6:18-22 Je '63. (MIRA 16:7)

(Boilers, Marine) (Automatic control)
(Electronic analog computers)

MARKOVETS, M.P., doktor tekhn. nauk, prof.; STEPANOV, G.A., inzh.

Study of the heat resistance of pins with rolled-on threads.
Teploenergetika 10 no.10:42-45 0'63 (MIRA 17:7)

1. Moskovskiy energeticheskiy institut.

L 12963-65 EWT(m)/EWA(d)/EWP(t)/EWP(b) MJW/JD

ACCESSION NR: AP4046807

S/0096/64/000/010/0055/0057

AUTHOR: Stepanov, G. A. (Candidate of technical sciences)

TITLE: The heat resistance of 20Kh1M1F1TR steel B

SOURCE: Teploenergetika, no. 10, 1964, 55-57

TOPIC TAGS: steel, heat resistance/ 25Kh2M1FA steel, 20Kh1M1F1TR steel, 25Kh2MFA steel, Kh12M steel, GWR 80/IV (GDR) machine tool, 1K62 machine tool, T15K6 plate, IP 4m machine ⁶

ABSTRACT: This steel is a new relaxation-resistant pearlitic type. It contains, in %: 0.22 C, 0.3 Si, 0.33 Mn, 0.002 P, 0.009 S, 1.22 Cr, 0.17 Ni, 0.09 Ti, 0.96 V, 0.96 Mo, and 0.005 B. Tests on protracted resistance were made at 565C. The tests were made by the previously developed method of M. P. Markovets and G. A. Stepanov (Teploenergetika, No. 10, 1963). The resistance of threaded samples was found to be lower than for smooth or notched samples. The rate of decline with increase in stress was much greater for the threaded samples than for smooth or notched samples.

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L 12963-65
ACCESSION NR: AP4046807

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Institute of Power Engineering)

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NO REF SOV: 002

OTHER: 000

Card 2/2

APT KAIN, P.A. Land. tekhn. nauk; E.L. ANOV, G.S. Land. tekhn. nauk

Effect of thermal treatment on the life of 10% from 50/20
steel with knurled thread. Energomashinostroenie 10 no.10:
29-30 (1961) (in Russian)

STEPANOV, G.A., kand. tekhn. nauk

Problem concerning the heat resistance of 20KhMnF1R steel.
Teploenergetika 11 no.10:55-57 0 '64. (MIRA 18:3)

1. Moskovskiy energeticheskiy institut.

MARKOVETS, M.P.; STEPANOV, G.A.

Effect of irregular peening in the creep testing of pipes. Zav.lab.
3G no.3:348-349 '64. (MIRA 17:4)

1. Moskovskiy energeticheskiy institut.

STEFANOV, G. G.

Method of testing fastening steel for stress-rupture strength.
(MIRA 17:5)
Zav. Lab. 30 nos. 596-598 '64.

1. Moskovskiy energeticheskiy institut.

L 57605-65 EWT(m)/EWP(w)/EWA(d)/I/EWP(t)/EWA(k)/EWP(z) b)/EWA(c) Pf. 4
ACCESSION NR: AP5014000 MJW/JD/HW UR/0096/65/000/006/0058/0060
669.14.018.45:621.772.4 3/30 B

AUTHOR: Stepanov, G. A. (Candidate of technical sciences)

TITLE: Heat resistance of pipe bends made of austenitic steel Kh18N10T 78

SOURCE: Teploenergetika, no. 6, 1965, 58-60

TOPIC TAGS: metal creep, impact strength, creep rate, high temperature property,
metal property/ Kh18N10T steel 14

ABSTRACT: To determine the effects of cold working on the high temperature prop-
erties of steel Kh18N10T ($\sigma_B = 69 \text{ kg/mm}^2$, $\sigma_{0.2} = 30 \text{ kg/mm}^2$, $\delta_5 = 46\%$) used for
high temperature steam pipes, specimens taken from cold-worked pipes were sub-
jected to creep, long-term loading strength, and impact tests (at 600C). Specimens
were either not heat treated or subjected to heat treatment I (heating to 1100C,

Card 1/2

L 57603-65
ACCESSION NR: AP5014000

increased cold working, that type I heat treatment decreased creep by factors of 10-30, while type II treatment resulted in 1.5-1.7 times the creep rate of the type II treated specimens. The long-term loading strength for 0.8, 16, and 27% (elongation) cold worked specimens was found by measuring the time to failure under a 14.5 kg/mm² stress. It was determined that cold working decreased time to failure (900 hours at 0% cold work to 290 hours at 27%). Either of the heat treating methods returned the steel to its original long-term loading strength.

Card 2/2

I 9637-66 EWT(m)/EWA(d)/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) EWT/CD/HM
ACC NR: AP5027715 SOURCE CODE: UR/0129/65/000/011/0046/0047

AUTHOR: Stepanov, G. A.

ORG: Moscow Energetics Institute (Moskovskiy energeticheskiy institut)

TITLE: Effect of work hardening on the ultimate strength of pearlitic steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 11, 1965, 46-47

TOPIC TAGS: work hardening, strain hardening, plastic deformation, pearlitic steel,
ultimate strength / 25Kh2M1FA steel

ABSTRACT: Although work hardening is known to adversely affect the heat resistance of low-alloy pearlitic steels at temperatures above 500°C, it has also been shown (Ye. I. Krutasova, Elektricheskiye stantsii, 1963, no. 6) that the strain hardening (to 15% relative elongation) of Cr-Mo-V steels at normal temperatures may increase their heat resistance even at 580°C. To verify this, the author investigated annealed rods of 18-mm diameter, of 25Kh2M1FA steel (0.24% C, 0.25% Si, 0.60% Mn, 2.29% Cr, 1.05% Mo, 0.43% V, 0.018% S, 0.021% P, 0.20% Ni), which were normalized from 1000-1050°C, tempered at 660-680°C for 6 hr and cooled in air. After this heat treatment the steel had the following properties: tensile strength 88 kg/mm², yield point 76 kg/mm², relative elongation 16%, plasticity 66%, and Brinell hardness 262. The effect of uniform work hardening on ultimate strength is examined.

Card 1/2

UDC: 669.14.018.45:620.178.38

L 9637-66

ACC NR: AP5027715

at 550°C. The tests were carried out on specimens subjected to plastic deformation $\psi = 0, 2, 6$, and 8% (tensile strain) and 6, 20 and 40% (drawing strain). This was followed by tests of ultimate strength which served as criteria for evaluating the effect of work hardening. Findings: as work hardening increases, ultimate strength decreases. Thus, in specimens with 40% deformation ultimate strength is 30% lower. It was also found, however, that while preliminary strain hardening indeed affects ultimate strength, it does not affect the plastic limit in fracture. Orig. art. has: 3 figures.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 002

Cord 2/2

STEPANOV, G.A., kand. tekhn. nauk

Heat resistance of the bends of steam pipes from Kh18N10T
austenitic steel, Teploenergetika 12 no.6:58-60 Je '65.
(MIRA 18:9)

1. Moskovskiy energeticheskiy institut.

L 61510-65 EWT(d)/EWP(w)/EWT(m)/EWP(c)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/
EWP(b)/EWP(1) PF-4 MJW/JD
ACCESSION NR: AP5012501

UR/0032/65/031/005/0606/0608
620.178.2

AUTHORS: Stepanov, G. A.; Mikhaylova, A. F.

TITLE: Influence of specimen thickness on the region of brittle-ductile failure

SOURCE: Zavodskaya laboratoriya, v. 31, no. 5, 1965, 606-608

TOPIC TAGS: impact strength, metal property, ductile fracture, brittle fracture/
MK 30 test apparatus, MSt 3kp steel

ABSTRACT: To determine the effects of specimen thickness in impact tests, single specimens of 2-, 3.3-, 5-, and 10-mm thickness and composite samples of 10-mm thickness (five 2 mm, three 3.3 mm or two 5 mm specimens fastened together) made of steel MSt. 3kp ($\sigma_B = 46 \text{ kg/mm}^2$, $\sigma_T = 23.5 \text{ kg/mm}^2$, $\epsilon = 34\%$, $\psi = 65\%$) were tested in an MK-30 apparatus over a temperature range of -80 to 80C. It was found that impact strength-temperature curves are displaced towards lower temper-

Card 1/3

L 61510-65

ACCESSION NR: AP5012501

decreased specimen thickness (η = 50% ductile fracture at -40, -10, 10 and 300 for 2-, 3.3-, 5-, and 10 mm thick samples respectively). Composite specimens were found to act similarly to single samples. In the region of brittle-ductile failure the impact strength could be described adequately by

$$a_n = C - k \log b,$$

where (b = specimen thickness, C and k = constants). This is shown in Fig. 1 on the Enclosure. Orig. art. has: 3 figures.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut kislorodnogo mashinostroyeniya (All-Union Scientific Research Institute for Oxygen Machinery Construction)

SUBMITTED: 00

ENCL: 01

SUB CODE: MM

NO REF SOV: 001

OTHER: 001

Card 2/3

L 61510-65

ACCESSION NR: AP5012501

ENCLOSURE: 01

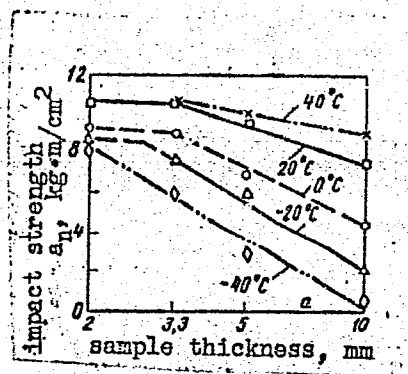


Fig. 1.

Impact strength as a function of specimen thickness

dm
Card 3/3

STEPANOV, G.A., kand. tekhn. nauk

Corrugated wedge-type gasket for flangeless connection of fittings.
Flak. sta. 36 no. 8:80-81 Ag '65.

(MIRA 18:8)

TSATILSKII, A.I.; TUREYAYEV, I.Ya.; FILIPENKO, F.S.; BASNEF, M.Ye.;
LISHCHATOV, V.V.; STEPANOV, G.A.

Investigating the kinetics of the oxidative dehydrogenation
of n-butylenes to bityl. Khim. prom. 42 no.9:647-651
(MIRA 18:9)
3 '65.

STEPANOV, G.A., kand.tekhn.nauk

Deformation of metal in screw-thread rolling. Vest.
mashinostr. 45 no.8:55-57 Ag '65.

(MIRA 18:12)

STEPANOV, G.A.

Anomalous effect of the thickness of a specimen on its impact strength in the zone of ductile fracture. Zav. lab. 31 no.11: 1386-1388 '65. (MIRA 19:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kislородnogo mashinostroyeniya.

L 31314-66 ENT(m)/EWA(d)/ENP(t) IJP(c) JD

ACC NR:

AP5027466

SOURCE CODE: UR/0032/65/031/011/1386/1388

AUTHOR: Stepanov, G. A.

ORG: All-Union Research Institute for Oxygen Equipment (Vsesoyuzniy nauchno-issledovatel'skiy institut kislородnogo mashinostroeniya)

TITLE: The anomalous effect of sample thickness on shock strength in the region of ductile failure

SOURCE: Zavodskaya laboratoriya, v. 31, no. 11, 1965, 1386-1388

TOPIC TAGS: test method, brittleness, ductility

ABSTRACT: Experiments were carried out on MSt3kp, Kh18N10T, and Kh14GN3T steels and AMg5V aluminum alloy. The samples of MSt3kp steel were made from a sheet 24 mm thick in the hot rolled state; the samples of Kh18N10T and Kh14G14N3T steels from sheets with thicknesses of 18 and 16 mm, respectively; and the samples of AMg5V aluminum alloy from a sheet 16 mm thick, in the hardened state. The mechanical properties of the starting materials are listed in a table. Samples of MSt3kp steel were tested at +90°C; those of Kh18N10T at +20 and -196°C; those of Kh14G14N3T at +20, -30, -80, and -196°C; and those of alloy AMg5V at +90, +20, and -196°C. The samples were cooled in a cryostat with liquid nitrogen or were cooled with ethyl alcohol. They were tested in a MK30

Card 1/2

UDC: 620.178.2

L 31314-66

ACC NR: AP5027466

instrument with a constant energy supply of 28.4 kgf·m. For MSt3kp steel at 90°C, the thickness of the sample did not affect shock strength, although there was noted a certain tendency for the latter to increase with an increase in sample thickness. Results for the aluminum alloy also showed no effect of sample thickness. For Kh14G14N3T steel, however, there was a sharp rise in the shock strength with an increase in thickness of the sample. In general, the experimental results are explained by the fact that, for different metals and different failure conditions, the range of thicknesses investigated lies in the region of brittle fracture. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: 00/ ORIG REF: 004/ OTH REF: 002

Card 2/2 CC

L 35927-66		EWT(m)/EWP(w)/EWP(v)/I/EWP(t)/ETI/EWP(k)		IJP(c)	JD/HM
ACC NR: AP6015107		(A)	SOURCE CODE: UR/0135/66/000/005/0031/0033		
AUTHOR: <u>Stepanov, G. A.</u> (Candidate of technical sciences); <u>Mikhaylova, A. F.</u> (Engi- neer)					
ORG: <u>VNIKIMASH</u>					
TITLE: The use of <u>08kp</u> steel in the manufacture of welded thin walled tanks for use at <u>low temperatures</u>					
SOURCE: Svarochnoye proizvodstvo, no. 5, 1966, 31-33					
TOPIC TAGS: arc welding, impact test, impact strength / 08kp steel					
ABSTRACT: The results of tests for <u>impact strength</u> , and tests carried out on thin- walled tanks made of 08kp steel are presented. The tanks are used for transporting and storing liquified propane and butane at temperatures down to -60°C. Tests were made using steel 3-4 mm thick. The chemical composition and properties of the steel are in conformity with <u>GOST 1050-61</u> . Grain size was 6-8 on the standard scale. The maximum content of S and P was 0.04% and 0.22%, respectively. Specimens were pickled 20-25 minutes at -80°C in nitrogen-cooled acetone and impact tested (test results are shown in tabular form). The <u>welds were made with a submerged arc</u> (AN-348A head) and the electrode diameter was 2 mm; the feed rate was 132-143 m/hr and the welding speed was 32-34 m/hr. It was found that hot rolled 08kp steel 3-4 mm thick exhibited a high					
Card 1/2			UDC: 621.791.011:62-464:669-974		

L 35927-66

ACC NR: AP6015107

degree of impact strength in the temperature range between 20°C and -60°C (not less than 5 kg/cm²) and that it retained sufficient plasticity. The weld joints' impact strength was good for all temperatures from 20 to -60°C. It was concluded that 08kp steel of the aforementioned composition can be recommended for the manufacture of thin-walled tanks for use at low temperatures down to -60°. Orig. art. has: 2 tables, 4 figures.

SUB CODE: 11/

SUBM DATE: none/

ORIG REF: 003

Card 2/2 *lll*

0 32079-66 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6013389 (N) SOURCE CODE: UR/0096/66/000/005/0055/0057

AUTHOR: Stepanov, G. A. (Candidate of technical sciences)

ORG: VNIIMASH

TITLE: Long term strength of pins made of alloy KhN35VT (EI612)

SOURCE: Teploenergetika, no. 5, 1966, 55-57

TOPIC TAGS: *hardness, metal heat treatment,* ultimate strength, alloy steel/alloy steel KhN35VT

ABSTRACT: Tests were carried out on pins made of KhN35VT alloy of the following chemical composition (%): 0.05 carbon; 0.46 silicon; 1.51 manganese; 0.010 sulfur; 0.011 phosphorus; 2.98 tungsten; 15.55 chromium; 34.55 nickel; 1.35 titanium; this corresponds to GOST standard 5632-61. Heat treatment of samples of the alloy was carried out as follows: austenizing--heating to 1180°C, holding for 1 hour, quenching in water; ageing--heating to 730°C, holding for 25 hours, cooling in air. The pins were prepared with a length of 50 mm and a notch of M10 x 1.5. The experimental results, exhibited in the article in graphic form, show that the long term strength of notched pins is 28 kgf/mm², while for smooth samples and samples with a single annular notch it is 25 kgf/mm². With a decrease in the stresses in the pins,

Card 1/2

UDC: 621.88.620.12

L 32079-66

ACC NR: AP6013389

the service life up to destruction approaches the literature data, that is, on the basis of 10,000 hours, the limit of long term strength is identical, and is equal to 20 kgf/mm². Evidently, with long service lives, there must be expected a decrease in the long term strength of the pins, in comparison with smooth samples (a decrease in σ_{10^5} by 10%). Orig. art. has: 4 figures.

SUB CODE: 11/3/ SUBM DATE: none/ ORIG REF: 007/ OTH REF: 001

Card 2/2 *BLG*

ACC NR: AP700374

SOURCE CODE: UR/0314/67/000/001/0028/0030

AUTHOR: Stepanov, G. A. (Candidate of technical sciences); Baranov, N. S. (Engineer)

ORG: none

TITLE: Strength and behavior of AMg5V alloy and its welds at low temperatures

SOURCE: Khimicheskoye i neftyanoye mashinostroyeniye, no. 1, 1967, 28-30

TOPIC TAGS: aluminum ~~magnesium~~ alloy, ~~aluminum-magnesium alloy~~ weld, ~~aluminum~~ ^{evaluation}
magnesium alloy property, ~~alloy~~ ^{mechanical} low temperature, ~~property~~ ^{phenomenon} /AMg5V ~~aluminum-magnesium~~
alloy

ABSTRACT:

Specimens of AMg5V aluminum-magnesium alloy and its welds have been tested by VNIIMASH for their strength and behavior at low temperatures (+20 to -253C). It was found that with decreasing temperature from +20 to -253C, the tensile and yield strengths increased from 30.1 to 54.3 kg/mm² and from 15 to 17.7 kg/mm², respectively. Elongation and reduction of area increased from 28.8 to 44.0% at -196C and from 42.5 to 51.0% at -78, respectively, and then began to decrease with decreasing temperature. The notch toughness decreased from 5.2 kg·m/cm² at +20C to 2.6 kg·m/cm² at 253C. Tests of welds showed that their strength increased with decreased

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UDC: 669.715:539.4

ACC NR: AP7003745

temperature, while elongation and reduction of area decreased. Comparison of results obtained with parent metal and welds showed that the mechanical properties of welds are much lower than those of the parent material. At room temperature the weld strength was 95% and the notch toughness was 75% of that of the parent material. At -253C the former was 60% while the latter was 85—90%. It was also found that the notch toughness depends very little on the thickness of specimens. At -196C the notch toughness was 4.4 and 4.3 kg·m/cm² for specimens 3.3 and 15 mm thick, respectively. Orig. art. has: 3 figures and 4 tables. [TD]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 003/ ATD PRESS: 5115

Card 2/2

STEPANOV, G.A.

New data on the occurrence of nugget gold in the Berezovo gold ore deposit in the Urals. Trudy Gor.-geol. inst. UZAN SSSR no.40:159-163 '59. (MIRA 13:11)

(Ural Mountains--Gold ores)

STEPANOV, G.A. (Kishinev)

Increase of the butterfat percentage of cows in the sections of collective and state farms in Moldavia producing for the market. Agrobiologiya no.6:869-878 N-D '65.

(MIRA 18:12)

1. Zamestitel' ministra sel'skogo khozyaystva Moldavskoy SSR.

STEPANOV, G.A., otv. za vypusk

[By-laws of the Scientific Technological Society of the Forest Industries] Ustav Nauchno-tekhnicheskogo obshchestva lesnoi promyshlennosti. 1959. 29 p. (MIRA 13:10)

1. Nauchno-tekhnicheskoye obshchestvo lesnoy promyshlennosti.
(Forestry societies) (Lumbering)

BELAKOVSKIY, Ya.I., kand.tekhn.nauk; STEPANOV, G.A., inzh.

Selection of an optima alternative in stern tube construction on
seagoing vessels. Sudostroenie 27 no.3:32-34 Mr '61. (MIRA 14:3)
(Shipbuilding--Equipment and supplies)(Ship propulsion)

STEPANOV, G.A.; KOTOBIKHIN, V.A.; MYASOYEDOV, M.I.; CHUGUNNIKOVA, R.V.

Oxidative dehydrogenation of n-butane to 1,3-butadiene in the presence of iodine and hydrogen iodide acceptor. Effect of oxygen concentration. Neftekhimiia 5 no.6:815-819 N-D '65.

(MIRA 19:2)

1. Nauchno-issledovatel'skiy institut monomerov dlya sinteticheskogo kauchuka, Yaroslavl'. Submitted Dec. 11, 1964.

STERNIKOV, G.B.; LEEHAVA, A.N.

Increase electric locomotive runs between wheel turning repairs.

Elektr. tepl. tiaga no. 8:34-35 Ag '57.

(MLRA 11:7)

1. Nachal'nik depo Krasnaya Zvezda Kazanskoy zheleznyy dorogi (for Staryov)

2. Nachal'nik tekhnicheskoy otseila depo (for Lashin).

(Electric locomotives--Maintenance and repair)

STEPANOV, G.V.

STEPANOV, G.D.

On the Surami pass. Elek. i tepl. tiaga no.11:43-44 N '57.
(MIRA 10:11)

1. Nachal'nik lokomotivnogo depo Khashuri Zakavkazskoy dorogi.
(Georgia—Railroads)

STEPANOV, Georgiy Fedorovich; VOLOTHIKOVA, L.V., red.

[For business executive on the principle of material incentives] Khoziaistvenniku o printsipe material'noi zainteresovannosti. Voronezh, Voronezhskoe knizhnoe izd-vo, 1963. 40 p. (HRA 18:1)

(A) L 27317-66

ACC NR: AM6003226

Monograph

UR/

Chuyev, Yu. V.; Mal'nikov, P. M.; Petukhov, S. I.; Stepanov, G. F.; 34
Shor, Ya. B. B+1

Principles in the investigation of operations in military technics
(Osnovy issledovaniya operatsiy v voyennoy tekhnike) Moscow,
Izd-vo "Sovetskoye radio," 1965. 591 p. illus., biblio., index.
6000 copies printed.

TOPIC TAGS: operations research, military operation, military
engineering, weapon test, antiaircraft defense system

PURPOSE AND COVERAGE: This book is intended for engineers engaged in
military operations research. The reliability and efficiency of
a variety of products of military technology are critically
reviewed. Analytical methods used in evaluating these charac-
teristics in diverse combat situations are presented. The book
also contains information on the classical and the latest mathe-
matical optimization methods used in solving military engineering
problems. Special attention is given to statistical combat
modeling using computers. The text is illustrated by numerous
examples.

Card 1/3

UDC: 519.8

L 27317-66

ACC NR: AM6003226

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Card 2/3

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ACC NR: AM6003226

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SUB CODE: 15/ SUBM DATE: 18Sep65/ ORIG REF: 089/ OTH REF: 051

Card 3/3 *h*

STEPANOV, G. G.

LIVSHITS, E.M., inzhener; PONIZOVSKIY, M.M., inzhener; KHARKIN, Yu.A., inzhener;
LOGINOV, B.I., inzhener; RAFALOVICH, I.I., inzhener; STEPANOV, G.G.,
inzhener; KOZYAKIN, A.N., inzhener; RABINOV, B.S., inzhener

Air leaks in convective shafts of boiler installations. Elek.sta.26
no.10:38-47 0 '55. (MIRA 8:12)

1. Glavnoye upravleniye elektrostantsiy i elektrosetey Urala i Vostoka
Ministerstva elektrostantsiy (for Loginov) 2. Rostovenergo (for Rafa-
lovich) 3. Rostovenergoremont (for Stepanov) 4. Leningradskaya elektro-
energeticheskaya sistema (for Kozyakin and Rabinov)
(Boilers)

~~SECRET~~ G. I.

AID P. - 4115

Subject : USSR/Electricity

Card 1/1 Pub. 27 - 2/33

Authors : Zalesskiy, A. M., Doc. Tech. Sci., Prof., V. S.
Ravdonik, Kand. Tech. Sci., Dotsent, and G. I. Stepanov,
Eng.

Title : Mikhail Andreyevich Shatelen. On the occasion of his
90th birthday and the 65th anniversary of his engineering,
educational, scientific and social activity.

Periodical : Elektrichestvo, 12, 2-6, D 1955

Abstract : The authors give a detailed description of the life and
activities of the distinguished scientist and professor.
One photograph.

Institution : None

Submitted : O 31, 1955

L 65252-65 EWT(1)/EWP(e)/EWT(m)/EWP(1)/T/EWP(b)/EWA(b) IUP(c) AT/WE
ACCESSION NR: AP5014554 UR/0181/65/007/006/1630/1633

AUTHOR: Kolomiets, B. T.; Mamontova, T. N.; Stepanov, G. I.

TITLE: Concerning the impurity and induced photoconductivity of $\text{Te}_2\text{Se-As}_2\text{Te}_3$ chalcogenite glass

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1630-1633

TOPIC TAGS: impurity photoconductivity, induced photoconductivity, glass property, carrier lifetime, relaxation time

ABSTRACT: This is a continuation of earlier work on the electric properties of glass semiconductors (FTT, Collection 2, 22, 1959, and elsewhere). The glass chosen had a relatively high conductivity at room temperature ($10^{-3} \text{ ohm}^{-1} \text{ cm}^{-1}$), making it possible to carry out the measurements at low temperatures. In addition, this composition shows a clearly pronounced thermostimulated current. The samples were investigated under various conditions at low temperature in darkness and illuminated. The photocurrent was measured in the temperature interval 100--200K af-

Card 1/2

L 65252-65

ACCESSION NR: AP5014554

3

what, and this photoconductivity was preserved for a long time in darkness. Removal of the long-wave radiation caused the dark conductivity to decrease slowly to its initial value. The existence of induced photoconductivity without a pronounced maximum confirms the hypothesis that the forbidden band of amorphous substances contains fluctuation levels. The depth of the local levels is estimated at 0.45 ev. The time dependence of the impurity and induced photoconductivity were also investigated. The time of growth of the photoconductivity to

from 10 to 100 seconds for
figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad
(Physicotechnical Institute, AN SSSR)

SUBMITTED: 24 Oct 64

ENCL: 00

SUB CODE: MT, OP

NR REF SOV: 010

OTHER: 001

Card 2/2

L 2118-66 EWT(1)/EWT(m)/ETC/ENG(m)/EWP(t)/EWP(b) IJP(c) RDW/JD/AT

ACCESSION NR: AP5022707

UR/0181/65/007/009/2698/2700

AUTHOR: Kolomiyets, B. T.; Stepanov, G. I.

TITLE: Impurity photoconductivity in single-crystalline and vitreous arsenic selenide

SOURCE: Fizika tverdogo tela, v. 7, no. 9, 1965, 2698-2700

TOPIC TAGS: photoconductivity, impurity photoconductivity, arsenic selenide, single crystal, vitreous state

ABSTRACT: By the use of advanced methods of investigation, an additional maximum of photoconductivity at $\lambda = 1.1 \mu$, and an independent maximum at $\lambda = 2.7 \mu$ were detected at room temperature in single-crystalline arsenic selenide. The value of the first-mentioned maximum varies from sample to sample, which indicates the presence of an impurity effect. The same appears to be true in the case of the second maximum. Under the assumption of an impurity character of the photoconductivity, the depth of impurity levels was established at 0.95 ev and 0.45 ev for the first and second maxima, respectively. A study of the spectral distribution of photoconductivity at a sufficient preliminary illumination led to the conclusion that, in the interval between the two maxima, optical quenching occurs. This effect depends on

Card 1/2

L 2118-66

ACCESSION NR: AP5022707

the wavelength of the infrared light, and has a maximum at 1.3 μ . Impurity conductivity has also been observed in vitreous arsenic selenide with a maximum at 1.9 μ which corresponds to a 0.74-ev depth of impurity levels. No quenching of light occurs in vitreous materials. Orig. art. has: 4 figures. [ZL]

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad
(Physicotechnical Institute, AN SSSR)

SUBMITTED: 26Mar65

44,05
ENCL: 00

SUB CODE: SS,EM

NO REF SOV: 001

OTHER: 005

ATD PRESS: 4117

Card 2/2 *98*

STEPANOV, G.I.

"The Hydrogeological Investigation of Mineral Resource Deposits", Tsvet.
Met. 14, No 8, August 1939.

Report U-1506, 4 Oct. 1951.

STEPANOV, G.I.; BUSOL, F.I.

Refining of zirconium by the iodide method. Atom.energ. 3 no.10:
344-346 0 '57. (MIRA 10:10)

(Zirconium--Metallurgy)

24,7600

26.2532

24931

S/181/61/003/006/028/031
B102/B214

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AUTHORS: Burdiyan, I. I., Rozneritsa, Ya. A., and Stepanov, G. I.

TITLE: The thermoelectric properties of solid solutions of the system AlSb-GaSb

PERIODICAL: Fizika tverdogo tela, v. 3, no. 6, 1961, 1879-1882

TEXT: Burdiyan together with others has published several papers on the system AlSb-GaSb. The present paper gives a report of the investigations on the thermoelectric properties of this system in the temperature range 120-900°K. The samples whose composition is given in the table had a size of 15.5.3 mm. A measurement of the temperature dependence of the differential thermo-emf α showed that for all compositions there is an initial increase in α with increasing temperature to about 400°K, and then on further increase of temperature up to 900°K the α value remains nearly constant. Only pure GaSb shows a maximum at 400°K after which α falls again to its original value or lower. As shown before, (A. I. Blum. FTT, I, 5, 766, 1959) α increases in p type GaSb with temperature till the impurity conduction range, then decreases with the appearance of carriers

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of opposite sign changing sign at about 740°K which fact is to be attributed to the donor levels. The numerical results of measurements (α in $\mu\text{V}/\text{deg}$ and the mass ratio m_p/m_0) are also given in the table. The effective hole mass m_p is calculated according to the formula of Pisarenko:

$$\alpha = \frac{k}{e} \left[A + \ln \frac{(2\pi m_p kT)^{3/2}}{nh^3} \right]$$

The constant A depends on the scattering mechanism of the carriers. Taking into account the carrier scattering by acoustic vibrations and by the disordered structure of the alloy, and the fact that $u \sim T^{-3/2}$ it is found that for temperatures above room temperature the mean free path does not depend on the velocity, and so $A \approx 2$. Thus the effective hole mass was calculated for the range 350-700°K and the mean value (taking into account the errors of measurement) is given in the table. The measurements showed that 1) α increases with AlSb content in the system investigated, 2) α reaches a maximum value in the range 350-500°K for all compositions (this makes it possible to use these compositions in thermoelements working in this temperature range), and 3) the effective hole mass in the AlSb-GaSb

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mixture reaches higher values than in the individual components. The authors thank Professor B. T. Kolomiets for his interest and discussions. There are 2 figures, 1 table, and 11 references: 9 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Tiraspol'skiy gosudarstvennyy pedagogicheskiy institut im. T. G. Shevchenko (Tiraspol' State Pedagogical Institute imeni T. G. Shevchenko)

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Состав термоэлектрических растворов <i>Composition of solid solutions</i>		ρ , мВ/град. ($T = 300^\circ \text{K}$)	$\frac{\rho}{\rho_0}$
AlSb	(1:0)	≈ 470	0.90 ± 0.10
3AlSb · 2GaSb	(3:2)	475	1.80 ± 0.20
AlSb · GaSb	(1:1)	444	0.98 ± 0.10
2AlSb · 3GaSb	(2:3)	397	0.88 ± 0.08
AlSb · 4GaSb	(1:4)	307	0.70 ± 0.05
GaSb	(0:1)	283	0.26

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KOLOMIYETS, B. T.; MAMONTOVA, T. N.; LEBEDEV, E. A.; MAZETS, T. F.; STEPANOV, G. I.;
LASHKAREV, V. Ye.; SALKOV, E. A.; SHEYNKMAN, M. H.

"Fast recombination processes in single crystals of CdS and CdSe."

report submitted for Intl Conf on Physics of Semiconductors, Paris, 19-24
Jul 64.

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STEPANOVICH

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